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| 10/509,538 | 09/28/2004 | Kuniaki Okada | 62121(70904) | 7788 |

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EDWARDS & ANGELL, LLP
P.O. BOX 55874
BOSTON, MA 02205

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| EXAMINER |
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MCPHERSON, JOHN A

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| ART UNIT | PAPER NUMBER |
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1756

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 01/24/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/509,538

Applicant(s)

OKADA ET AL.

Examiner

John A. McPherson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 and 13-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-11 and 19-29 is/are rejected.
- 7) ☒ Claim(s) 12 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/28/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II, claims 5-12 and 19-30 in the reply filed on 10/27/06 is acknowledged.

Claims 1-4 and 13-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 8, lines 6-7 presents the limitation "etching is carried out on the negative resist layer so as to transfer a patterned shape of the negative resist layer to the dielectric substrate". However, this embodiment is not described in the specification.

In the presently claimed invention, antecedent basis for the term "the dielectric substrate" is provided in claim 1, line 3, which states "forming on an inorganic dielectric substrate a first micro-lens array". Therefore, the term "inorganic dielectric substrate"

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refers to the substrate upon which the first micro-lens array is formed (e.g. see silica substrate **21** in Figures 3(a)-(f), and page 19, lines 9-15 of the specification). As described in the specification, this is not the substrate into which the patterned shape of the negative resist is transferred.

The specification teaches that "the lens pattern engraved on the resist layer **42** is transferred to the silica glass sheet **24** by dry etching" (page 21, lines 20-23). This is a different element from the silica substrate **21** upon which the first micro-lens array is formed. Silica glass sheet **24** corresponds to the "middle layer made of an inorganic dielectric material " in claim 6, line 3. While **21** and **24** both comprise inorganic dielectric material, only **24** is etched using the resist layer.

Accordingly, this rejection could be overcome by amending claim 8, line 7 so as to correct "inorganic dielectric substrate" to --middle layer--. Furthermore, the dependency of claim 8 should be changed from "claims 5 through 7" to --claims 6 or 7--, because independent claim 5 is not limited to the step of further providing a middle layer (i.e. the "middle layer" first appears in dependent claim 6).

3. Claim 23 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Claim 23, lines 10-11 presents the limitation "the second micro-lens array is etched to transfer the pattern of the second micro-lens array to the first micro-lens array". However, this embodiment is not described in the specification.

For the embodiment utilizing a photosensitive resin having a two-layer structure as set forth in claim 23, the specification teaches "the lens pattern engraved on the resist layer **72** is transferred to the high-refractive ultraviolet curable layer resin layer **71** by dry etching" (page 31, lines 10-15). See Figures 7(a)-(e). This corresponds to the "first photosensitive resin" of claim 23, lines 3-4 (not to the first microlens array).

Accordingly, this rejection could be overcome by amending claim 23, line 11 so as to correct "first micro-lens array" to --first photosensitive resin--.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 5-7, 9-11, 19-29 are rejected under 35 U.S.C. 102(a) or (b) as being anticipated by either one of "Fabrication Method of Double Micro Lens Array Substrate"

by Fujita et al. [reference CA of the Information Disclosure Statement filed 9/28/04] (Fujita) or "31a-W-11 Fabrication of Double Micro Lens Arrays Using a Self-Aligned Exposure Method" by Okada et al. [reference CB of the Information Disclosure Statement filed 9/28/04] (Okada).

Each one of Fujita and Okada disclose a method of fabricating a micro lens array comprising the steps of forming a first microlens array on a silica substrate; providing a silica middle layer, a high-refractive index resin layer, and a thick negative resist layer on the first micro lens array; exposing the resist layer with a parallel UV light beam from the substrate side such that the first microlens array converges the light beam within the resist layer, so as to form a pattern of a second micro lens array; and transferring the pattern of the second micro lens array to the high-refractive index polymer layer by etching. See section 3. "Fabrication Steps of MLA" beginning on page 2 of Fujita and the paragraph labeled "[Fabrication]" beginning on the page 1 of Okada.

While these references were both provided with the Information Disclosure Statement filed 9/28/06, Applicant did not provide their publication dates. Therefore, they have been applied alternatively under 35 USC 102 (a) or (b).

5. Claims 19 and 25-27 rejected under 35 U.S.C. 102(e) as being anticipated by US 6,594,079 to Trott et al. (Trott). Trott discloses a method of forming an image screen comprising providing a bubble lens array on the back side of a main screen body; depositing a photoresist on the viewer side of the main screen body; exposing the photoresist to light projected through the screen; developing the photoresist; overlaying

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an opaque anti-reflective layer on the assembly, and removing the photoresist. See the abstract and column 6, line 50 to column 8, line 4.

Allowable Subject Matter

6. Claim 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 1st paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

7. Claims 12 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. McPherson whose telephone number is (571) 272-1386. The examiner can normally be reached on Monday through Friday, 8:00 AM to 4:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John A. McPherson
Primary Examiner
Art Unit 1756

JAM
1/22/07